

## ABSTRACT

A bidirectional turbo ISI canceller cancels precursor-ISI as well as postcursor-ISI in a received signal without incorporating a multiplicative feedforward equalization filter. This is accomplished by taking a three-step receiver design approach. In the first step, an optimal single-symbol RAKE receiver is designed to comprise a CMF, a codeword correlator bank, and an energy bias (EB) canceller under the assumption that no ISI is generated by preceding or trailing symbols. In a second step, a DFE is included for suppressing postcursor-ISI caused by a preceding symbol. Finally, a precursor ISI canceler is used to remove the remaining ISI caused by a trailing symbol. All three components may be integrated into a BTIC-based receiver applying turbo-iteration processing.